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*Article*

# Leadership and Reshaping Schooling in a Networked World

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**Abstract:** This paper is initiated from a position that, until recently, the nature of schooling globally has remained largely unchanged since its design in the last century, and there has been a hegemony that supported its form to be enduring and largely unchanged. However, in a digital, networked world, there is a need to rethink and redefine schooling. Following an examination of schooling in the 21st Century, summarising the context and critical challenges presented by new and emerging digital technologies, suggestions about what schooling might look like in an increasingly digital, networked world are presented. Guidance is provided in relation to key questions for leadership to reshape schooling in a networked world, including:

- how might schools move into the networked mode?
- what is required to lead and manage a networked school community?
- how will a networked school become defined less by its physical space and timetabled lessons, but by being networked and that learning can take place anywhere, anytime?

**Keywords:** digital technologies; leadership; networked school community; networked world; school evolution; digital normalisation

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## 1. Introduction—Schooling in the 21st Century

Schooling in the 21st Century has the potential to be markedly different from that of the previous century, due largely to the immense technological changes. The challenge and the opportunities are summarised effectively by Johnson *et al*. [1]:

> *...creative institutions are developing new models to serve students, such as providing open content over the network. ...Students can take advantage of learning material online, through games and programs they may have on systems at home, and through their extensive—and constantly available—social networks. The experiences... tend to happen serendipitously and in response to an immediate need for knowledge, rather than being related to topics currently being studied in school. ...having a profound effect on the way we experiment with, adopt, and use emerging technologies [1].*

The evidence of the major technological changes and the changes occurring in schooling are underpinned by the shift to digital technologies that are increasingly networked. This calls for strategic leadership, based upon sophisticated understandings of this shift, and this paper aims to progress the conversation about rethinking and redefining schooling in our networked world.

This has been conceptualised here by considering that renditions of schooling tend to refer to a physical space and place, where an institution is visible in terms of its architecture, and where staff and its students attend for the purposes of curriculum, assessment and pedagogy. However, in a digital, networked world, in which many young people have long since normalized the use of digital technologies [2,3], those digital technologies provide the catalyst for questioning how, when, where and why learning and teaching should take place. This normalization has been largely influenced in recent times, not by leadership from schooling systems, but through consumerisation. In relation to business, whereby business attempted to lead the technological innovation, Mukerji [4] argues that, "the business led innovation dynamic has flipped; today, the most innovative technologies are emerging from the consumer side".

Mukerji [4] refers to numerous examples of disruptive technologies characterised by consumers driving the changes. To illustrate, the "viral popularity of Facebook, which is now approaching a mind-boggling 1 billion active users, has taught enterprises that there is business value in social networking". We are witnessing unprecedented technology uptake beyond educational institutions with Dahlstrom [5] noting that, according to Gartner estimates, "515 million smartphones and 131 million tablets were sold by the end of 2012". According to Dahlstrom [5], "This 'consumerization of technology' is setting a precedent in which students, faculty, and staff use their own devices, software, apps, and cloud-based technology to create a personal computing environment". Accompanying these major shifts, driven by consumerisation and normalization of the personal, digital devices by young people, considerable research interest and literature has emerged in relation to online learning, elearning (electronic learning), mlearning (mobile learning), blearning (blended learning), and ulearning (ubiquitous learning) approaches.

Consequently, this paper makes two assumptions; namely

1. That there is a need to rethink and redefine schooling in a digital, networked world. This assumption provocatively suggests that the impact of technologies has disrupted other ways of

working, such as media, retail, banking, and other forms of business, and that, similarly, education is not immune from the impact and potential of technological changes; and

2. That leadership is needed to make transitions to a networked school community to be effected. This assumption draws upon the considerable educational leadership literature which highlights the critical role of leadership in schools which is needed to transform schooling.

It is possible to suggest that these two assumptions imply a technological determinist perspective, by interpreting them as meaning that the purpose of schooling is to prepare students for a future in which digital technologies enable economic advantage in a marketised world. While decisions about education and technologies are likely to be situated within a global knowledge economy, networked school communities opens up, rather than diminishes, dialogue about the broader purposes and possibilities of schooling. For example, networked school communities provide space and opportunities for discourse about improving equity and excellence in schooling.

A scan of this literature suggests that the potential for leveraging from these technological changes is no longer being driven by educational thinking and large institutional thinking and systems, but by the transformational thinking by those outside of the education systems. Examples include the rise of social media, the impact of Google, innovation by companies such as Apple and Samsung, technological innovations evident in the health professions, new models of doing business, success of creative individuals and innovation "skunkworks". In essence, innovation is occurring beyond schooling, and often the disruptive innovation is generated by smaller, rather than larger units, such as small ideas-focused project teams. May [6] clarifies skunkworks:

Over the years, the term skunkworks has come to refer to any effort involving an elite, special team that breaks away from the larger organization to work autonomously on an advanced or secret project, usually tasked with breakthrough innovation on limited budgets and under aggressive timelines.

May reinforces the value of skunkworks by referring to Steve Jobs who "cherry-picked a team of about 20 'pirates' as he referred to them, and seceded from the Apple main campus", and believed that "it's better to be a pirate than join the navy" [6]. Jobs needed "talented but audacious individuals who could move fast and get things done" [6].

While the achievements of current schooling structures are acknowledged and valued, there is evidence of schools referred to in this paper as "pathfinders" in schooling contexts where leaders are pushing the boundaries, and have some understandings of the changes occurring outside of schools. These "pathfinders" align with our explicit advocacy for educators to take advantage of the rapidly changing technological landscape to shape the future, and to control the narrative, by rethinking the nature of schooling.

Schools now find themselves situated in a fundamentally different, digital, networked and global environment that differs from the 19th and 20th Century in which many of our current systems and structure of schools were conceived and shaped. As the "place called school" goes digital, it experiences similar transformations that other organisations, for example, in industry, business, and government, have experienced. Consequently, this requires education policy makers, schooling systems, and school leaders to revisit, rethink and redefine the concept of the school and the nature of

schooling. This needs to be underpinned by an examination of the appropriateness and effectiveness of the schooling provided to young people in an increasingly networked world.

Therefore, this paper continues the conversation that is initiated from a position that the nature of schooling globally has, until recently, remained largely unchanged since its design in the last century, and that there has been a hegemony that has supported its form to be enduring and largely unchanged. However, it is noted that there are new ways of conceptualizing schooling, and that "pathfinders" have been evident. For example, as discussed elsewhere [3,7,8], those early adopting, pathfinding schools across the developed world have moved schooling from the traditional paper based operational mode to one that is digital, and they reflect the shift to becoming networked school communities. Following a reexamination of what is a school, and the context of new and emerging digital technologies and the critical challenges, what schooling might look like in a networked world is examined, and the conceptualisation of a networked school community is proposed. This paper adopts Mishra and Koehler's perspective [9] that teaching with technologies is a "wicked problem", drawing upon Rittel and Webber's [10] distinction between "wicked problems" and "tame problems". Wicked problems are characterised as being incomplete, contradictory, changing, and occurring in complex and unique social contexts. Solutions are often unable to be "right" or "wrong", but, for example, "better" or "not good enough", and involve engaging "expert knowledge to design solutions that honor the complexities of the situations and the contexts presented by learners and classrooms" [9].

To summarise, this is an important moment to reflect on the concept of schooling and the transitions underway in a networked world that provide some guidance for leadership and reshaping schooling in a networked world. In examining the evolution of schooling over the past decade, the work of Lee [11] and Twining [12], in their attempts to conceptualise possible explanations of the transitions through evolutionary stages of schooling, are both drawn upon. To conclude, the paper highlights that this continuing conversation enables a focus on the possibilities and potential of digital technologies for the learning of young people, through revisiting fundamental questions, such as—Are schools appropriately designed for 21st Century learning and teaching? Where and when does learning take place? What are the implications of elearning, mlearning, blearning and ulearning? What constitutes a school in a networked world where students no longer have to physically attend to be taught and to learn?

## 2. Digital Technologies and Reshaping Schooling

Goodlad [13], in his seminal work A Place called School provides powerful messages based upon the premise that America's schools were seen by Goodlad as being in crisis and he warned that some might not survive. From this premise, Goodlad concludes that, "to think seriously about education conjures up intriguing possibilities both for schooling and a way of life as yet scarcely tried" [13]. More than 25 years later, schools are still largely defined as a physical place where students enrol and attend classes, consistent with the definition located in the Collins Dictionary, which states that a school is, "An institution or building at which children and young people under 19 receive an education" [14]. Similarly, Wikipedia defines "a school as an institution designed for the teaching of students (or pupils) under the supervision of teachers" [15]. Interestingly, the first of those two definitions focuses on the "building" or physical entity. While the second definition does not

necessarily refer to physical spaces, such as buildings, neither seems to be inclusive of alternative models of schooling, and neither refers to the important purposes of schooling, other than "receive an education".

A Google search of "schools" and "schooling" revealed the emergence of "virtual schools", "schools of distance education", "online Universities", and "home schooling". Therefore, there is no evidence of education authorities, systems and schools exploring options and affordances of new technologies and new ways of defining schooling through expanding opportunities of when, where and how learning takes place. The move to online learning has accelerated in the Higher Education sector, driven to a great extent, by the quest for attracting student enrolments and by pedagogical advantages not able to be provided through only face to face teaching. School systems have similarly responded to the social pressures and parental expectations relating to access to digital technologies which provides marketing attractions to maintain or increase enrolments.

Many schools in the developed world are moving to take advantage of digital technologies, with financial support being provided by their Governments, as education policy is seen as being linked to economic policy and productivity. Digital technologies are "now seen globally as essential to a country's economic success" [16]. Simultaneously, as this is occurring, access to technologies in schools has been more than matched by student access to digital technologies in their homes and for personal use.

Students, in many instances, are increasingly expressing their desire for their digital capability to be used in and out of the school. In the Project Tomorrow report, *From Chalkboards to Tablets: The Emergence of the K-12 Digital Learner Speak Up 2012 National Findings K-12 Students* [17], data showed that students in schools have increased access to devices which have generally been personally acquired, reflecting the consumerisation driver, and have not been school acquired. That report notes that, "The rate of proliferation of those personal devices, most notably tablets, has also been evidenced by the Speak Up data. …Despite this proliferation of mobile devices in the hands of students, schools are still reluctant to allow usage of such personal devices" [17]. Disturbingly, only 9 percent of all students indicated that they could use their personal tablets at school. Similarly, in relation to laptops, while 73 percent of high school seniors reported that they had their own laptop, only 18 percent of them indicated that they were allowed to use their personal laptop at school.

This evidence suggests that leadership requires increasing understandings of the dynamically changing context of students' personal access to technologies beyond "a place called school", more sophisticated understandings of drivers for change beyond educational institutions and systems, and the changing expectations that learning can be made available anywhere and anytime. These challenges present opportunities for leadership and reshaping schooling, which will build upon, and, in some instances, transform legacy structures and organisations designed for earlier times.

## 3. Trends in New and Emerging Digital Technologies

Since 2002, the New Media Consortium has produced an annual Horizon Report (NMC) that is compelling reading for leaders and educators. Each report identifies "six emerging technologies or practices that are likely to enter mainstream use in the educational community within three adoption

horizons over the next one to five years" [1]. For example, its 2011 edition identified the following six technologies for the following three adoption horizons:

1. Time-to-Adoption Horizon: One Year or Less—Cloud Computing, Mobiles
2. Time-to-Adoption Horizon: Two to Three Years—Game-Based Learning, Open Content
3. Time-to-Adoption Horizon: Four to Five Years—Learning Analytics, Personal Learning Environments [1]

Interestingly, in its 2013 edition [18] provided two years later, it identified the following technologies for those horizons:

1. Time-to-Adoption Horizon: One Year or Less—Cloud Computing, Mobiles Learning
2. Time-to-Adoption Horizon: Two to Three Years—Learning Analytics, Open Content
3. Time-to-Adoption Horizon: Four to Five Years—3D Printing, Virtual and Remote Laboratories

Each year, new "critical challenges" are identified for schooling and these shape the case for supporting a key assumption in this paper. That is, the need for rethinking and redefining schooling within the context of these dynamic technological changes. The *NMC Horizon Report 2013: K-12 Edition* [18] and subsequent, future issues can assist you in being aware of the latest technology trends and critical challenges, and, subsequently, to provoke thinking about the next phase of schooling as being networked school communities informed by those trends and challenges. For example, in the 2013 report, six relevant, key "critical challenges" are articulated, and these are summarised, with supporting explanation, in Table 1 below:

**Table 1.** Five Critical Challenges—*NMC Horizon Report 2013: K-12 Edition*.

| Critical Challenge | Supporting Explanation |
|---|---|
| **1. Ongoing professional development needs to be valued and integrated into the culture of the schools.** | "All too often, when schools mandate the use of a specific technology, teachers are left without the tools (and often skills) to effectively integrate the new capabilities into their teaching methods." [18] (p. 9) |
| **2. Too often it is education's own practices that limit broader uptake of new technologies.** | "In many cases, experimentation with or piloting of innovative applications of technologies are often seen as outside the role of teacher or school leader, and thus discouraged. Changing these processes will require major shifts in attitudes as much as they will in policy." [18] (p. 9) |
| **3. New models of education are bringing unprecedented competition to traditional models of schooling.** | "Across the board, institutions are looking for ways to provide a high quality of service and more opportunities for learning. MOOCs are at the forefront of these discussions, and have opened the doorway to entirely new ways of thinking about online learning. K-12 institutions are latecomers to distance education in most cases…" [18] (p. 9) |
| **4. K-12 must address the increased blending of formal and informal learning.** | "…designing an effective blended learning model is key, but the growing success of the many non-traditional alternatives to schools that are using more informal approaches indicates that this challenge is being confronted." [18] |
| **5. The demand for personalized learning is not adequately supported by current technology or practices.** | "The notion that one size-fits-all teaching methods are neither effective nor acceptable for today's diverse students is generally accepted among K-12 educators." [18] (p. 10) |
| **6. We are not using digital media for formative assessment the way we** | "Assessment is an important driver for educational practice and change, and… we have seen a welcome rise in the use of formative assessment in educational |

| | |
|---|---|
| **could and should.** | practice. However, there is still an assessment gap in how changes in curricula and new skill demands are implemented in education…" [18] (p. 10) |

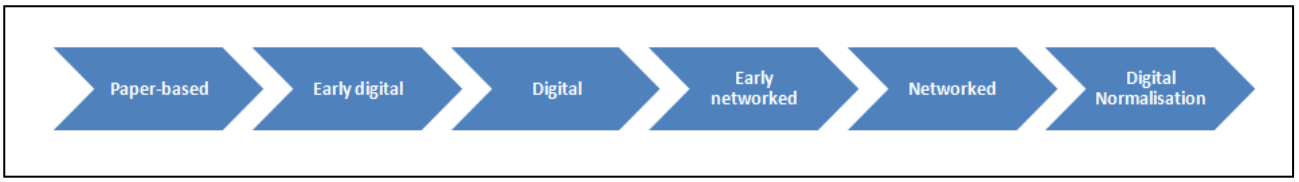
In relating these to various educational contexts, schools can determine the extent to which these are understood and being strategically addressed. In addition, past and current practices can be investigated to determine the extent to which these are limiting broader uptake of new technologies, such as blended learning approaches being designed and implemented, digital media being used for formative assessment, and whether or not cloud computing, and mobile learning are being incorporated.

The following section presents conceptualisations [11,12] of evolutionary stages of schooling, and this provides a framework against which schooling might be reshaped in a digital, networked world. Importantly, in considering evolutionary stages, the preceding discussion does not superficially discuss only the digital technologies, but the educational potential of what needs to be valued and integrated into the culture of schools, new models of education, the blending of formal and informal learning, personalised learning, and use of technologies for assessment.

## 4. Conceptualising Evolutionary Stages of Schooling and Networked School Communities

Lee and Broadie [11] propose that there are 6 evolutionary stages of schooling that can be identified, as shown in Figure 1 below.

**Figure 1.** Evolutionary Stages of Schooling [11].




According to Lee and Broadie [11], there is an identifiable shift among "pathfinder" schools which have moved from largely paper-based approaches to becoming digital schools, to then transform to becoming networked school communities [3] when they:

> *recognise that their digital and networked facilities removes the school's long-term reliance on students attending a physical place for learning and the necessity to continue operating as a largely insular organisation. They now begin to recognise the plethora of opportunities for human networking, and genuine collaboration with all the teachers of the young from birth onwards. It recognises the physical networks open the way for ever-greater and more effective human networking [11].*

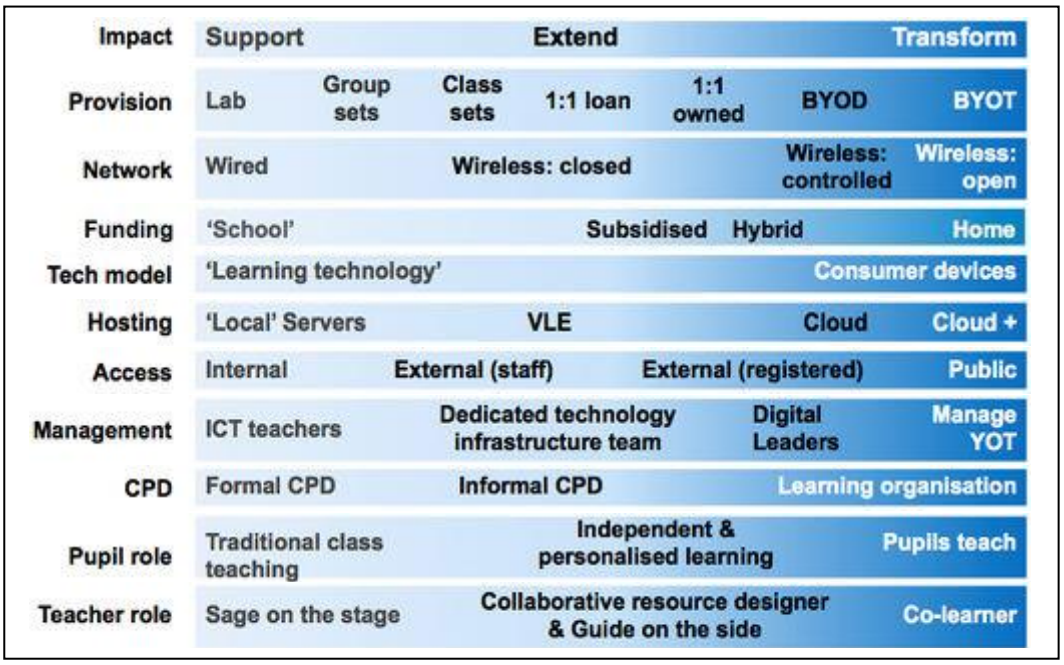
For Lee and Broadie [11], digital normalisation is realised when schools have adopted a distributed mode of control of the teaching process and are collaborating with their homes in the provision of a holistic, networked education for the 21st Century. Additional characteristics are that digital technology is normalised in all facets of the school's operations, including both the educational and administrative processes. Importantly, all key players such as the students, parents/caregivers, teachers and other school staff are networked and engaged. The school community has built a capacity to recognise and capitalise upon new and emerging technologies to not only enhance learning and teaching, but learning is enabled to occur pervasively anywhere, anytime in all facets of their lives and

throughout their lifespan. This is a critically important understanding needed to ensure that digital normalisation is not restricted to a conceptualisation that reflects the shift from paper-based to online, which leaves other models of schooling and approaches unchanged.

Through drawing his experiences and observations in England, through reviewing relevant literature, including a meta-analysis of case studies, Twining [12] complements the conceptualisation proposed by Lee and Broadie [11] by formulating the digital technology strategy trends, as shown in Figure 2. Twining's conceptualisation [12] similarly suggests a move from more traditional schooling practices on the left to more contemporary practices on the right of the figure. For Twining, the trends suggest changes in the role of the student and the role of the teacher within an environment whereby the technology model has shifted from "learning technology", "local" servers, wired network which had been closed and controlled to public access, open wireless networks and cloud+ hosting. Funding recognises the contribution made by the home and students' personal access and devices beyond "a place called school".

There is considerable detail offered by Twining for school leadership to consider and to identify where their educational context is currently situated in relation to these characteristics.

**Figure 2.** Digital Technology Strategy Trends [12].




There is value in both of the conceptualisations provided by Lee and Broadie [11] and Twining [12] through the guidance they provide by suggesting the reshaping of schooling through new narratives of students and teachers, rather than limiting the evolution to techno-centric discourses of schooling. To illustrate, Twining suggests that students can be seen as co-learners, constructing new knowledge, and learning independently and learning is personalised, rather than students only being the recipients of knowledge, although there might be justifiable situations for this to occur as well. Teachers are seen to also be co-learners, as well as collaborative resource designers.

Lipnack and Stamps in *Age of the Network*, while commenting on workplaces more generally, observed the changes almost 20 years ago in relation to networking:

> *Work rolls continuously around the world, following the sun, yet it is instantly accessible all the time by everyone whenever they need it. Boundaries are conceptual, not physical, in the virtual workplaces and need to be completely reconceived so that "physical site" thinking is no longer a limitation [19].*

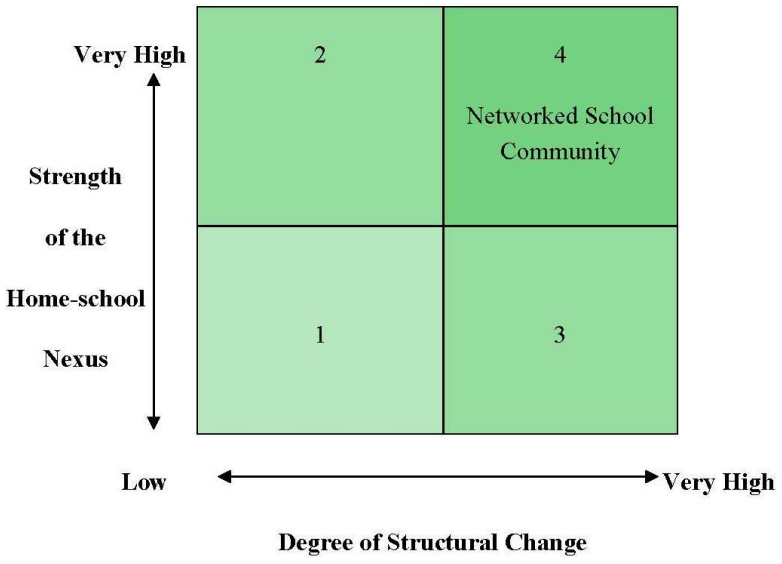
The restricted "physical site" thinking is still limiting the view of many about the nature of schooling in a networked world. Supported by the Horizon Report trends and critical challenges, there is the case to support our key assumption that leadership is required which redefines schooling in the networked world, and opens the way for schools to fulfill their obligations, while, at the same time, catering for their particular networked community and their students.

In Developing a Networked School Community: A Guide to Realising the Vision, Lee and Finger [3] defined a networked school community as being:

> *a legally recognised school that takes advantage of the digital and networked technology, and of a more collaborative, networked and inclusive operational mode to involve its wider community in the provision of a quality education appropriate for the future [3].*

Pathfinder schools which have normalised the use of digital technologies reflect this definition, while still allowing for the school to build upon and operate within the requirements of being a "legally recognised" school to fulfil its legislative functions and accountabilities. Most importantly, this provides schools working within the networked mode to be agile organisations to respond to and embrace new digital technologies, such as those identified in the Horizon Reports (e.g., [1,18]). For example, networked school communities enable a school to use its educational expertise to wider advantage such as preparing others like parents and caregivers, grandparents, community elders, coaches and older students to assist in the collaborative, interdependent "teaching" of the young throughout the entire lifelong learning lifecycle. This allows schools to ensure that the strength of the home-school nexus is very high, and the degree of structural change is also very high [3] and reflected in Quadrant 4 of the Networked School Options Matrix, shown in Figure 3 below.

**Figure 3.** Networked Schools Options Matrix.




This matrix is discussed more comprehensively elsewhere [3] in terms of elements for strengthening the home-school nexus and for making the structural changes, such as updating the

administration and communication infrastructure, establishing digital teaching hubs, undertaking collaborative vision setting, recognising the importance of access to technologies and learning in the home, capitalizing on student expertise, enhancing the role of informal learning, and implementing a networked school curriculum.

## 5. Rethinking the Balance—Networked School Communities and TPACK Capabilities

The shortcoming of the current definition of schooling as being restricted to a physical place called school is reflected in the tensions and contradictions evident between formal and informal learning. Formal learning tends to be characterised by the "command and control" metaphor whereby the education professionals within schools focus on an academic education and status is assigned to the timetabled, formal learning and teaching. This is explicit and well understood by teachers and students with responsibility largely assigned to the school and the teachers. In contrast, informal learning is more implicit and often not assigned status as valued learning. Informal learning allows for including anytime, anywhere learning available 24/7/365 by the students, parents/caregivers and community beyond the traditional school physical place and timetabled lessons.

This was recognised by the Illinois Institute of Technology/Institute of Design [20] and highlights the disjuncture between in school and out of school lives resulting in the lack of real-world relevance of learning in formal schooling.

> *Kids lead high-tech lives outside school and decidedly low-tech lives inside school. This new "digital divide" is making the activities inside school appear to have less real-world relevance to kids. A blend of intellectual discipline with real-world context can make learning more relevant, and online technology can bridge the gap between the two [20].*

In a similar manner, almost a century ago, John Dewey also advised curriculum designers to attend to the balance between the informal and formal, and noted that:

> *...there is the standing danger that the material of formal instruction will be merely the subject matter of schools, isolated from the subject matter of life experience... This danger is never greater than at the present time, on account of the rapid growth in the last few centuries of knowledge and the technical mode of skills [21].*

It is an opportune time for nations to revisit what they want from their schooling systems. What might nations, that have large annual education budgets, expect of their schools in a networked world? To retain the status quo is insufficient in a global, networked world in which countries need to be internationally competitive driven by innovation.

Central to both the strength of the home-school nexus and the structural changes will be the underlying principle of focusing on *quality teaching*, as well as *quality teachers*. Networked school communities understand and foreground *quality teaching* and the roles played by many in enhancing student learning, and is inclusive of the sites for learning—in addition to the formal "place called school". Teaching has been largely informed by understandings of Shulman's pedagogical content knowledge (PCK), described by Shulman [22] as "the special amalgam of content and pedagogy that is uniquely the province of teachers, their own special form of professional understanding". PCK

highlights the importance of teachers' deep knowledge of the curriculum, and the pedagogical knowledge needed to teach this disciplinary knowledge successfully.

However, for teachers to have the readiness to effectively design and engage in networked school communities, we believe that PCK is insufficient without the technological knowledge needed to complement the content knowledge and pedagogical knowledge. Koehler and Mishra [23] have made a substantial contribution by conceptualising *Technological Pedagogical Content Knowledge* (TPCK)—now referred to as TPACK with the connotation of TPACK being the *total package* as a way of representing what teachers need to know about technology, content, and pedagogy. The expanding TPACK research and literature is now informing the development of TPACK capabilities and illuminating what TPACK looks like in practice.

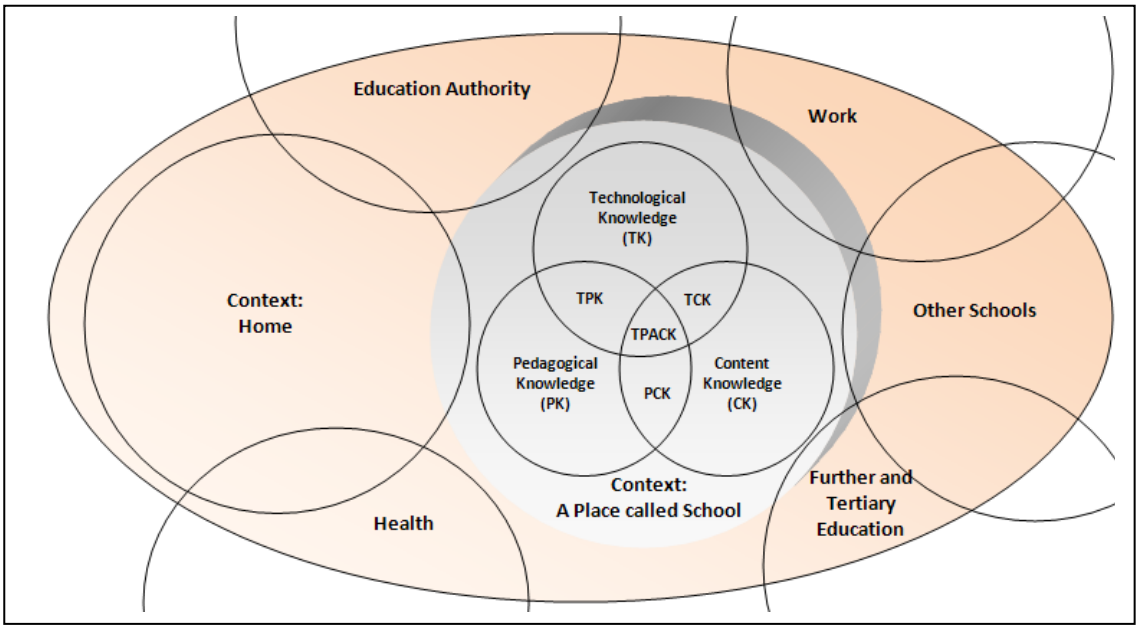
According to Mishra and Koehler [24], teachers with TPACK capabilities not only have content knowledge, pedagogical knowledge, and technological knowledge, but they also have the capabilities to understand the complex interactions between these knowledge components and can make sense of these in terms of their educational contexts. Their advice is consistent with the role of teachers as co-learners and collaborative resource designers, outlined by Twining [12], and referred to earlier in this paper, whereby teachers who have this type of understanding are characterised by the creative, flexible, and adaptive ways in which they navigate the constraints, affordances, and interactions within the TPACK framework.

> *The TPACK framework suggests that the kinds of knowledge teachers need to develop can almost be seen as a new form of literacy… Viewing teachers' use of technology as a new literacy emphasizes the role of the teacher as a producer (as designer), away from the traditional conceptualization of teachers as consumers (users) of technology [24]*.

Consequently, Finger and Jamieson-Proctor [25] suggest that teacher readiness for networked school communities can be framed in terms of TPACK capabilities with the teacher positioned as curriculum designer. They indicate that this readiness "provides teachers with the capabilities required to take advantage of the digital, networked technology, and become a participant in a more collaborative, networked, inclusive operational mode involving the wider community in the provision of a quality education appropriate for the digital future" [25].

In developing a networked school community, TPACK enables understandings about how the selection of technologies and the technologies infrastructure requires pedagogic and content considerations to inform the technological decisions. TPACK also understands that this is a "wicked problem" and that the complexity of your context matters. Consequently, leadership and reshaping initiatives require "nuanced understanding that goes beyond the general principles of content, technology, and pedagogy" [26] to gain a deeper understanding how those knowledges are situated "in particular contexts (including knowledge of particular students, school social networks, parental concerns, *etc*.)" [26] and "imparts the kind of flexibility teachers need in order to succeed" [26]. Figure 4 positions TPACK within the context of networked school communities where "a place called school" displays TPACK required for teacher readiness, and displays open, networked learning communities.

**Figure 4.** Conceptualisation of Technological Pedagogical Content Knowledge (TPACK) and the Networked School Community [25].




The following sections provide further guidance through discussion of considerations in moving towards a networked school community. These include expanding the academic focus, expanding the educational perspectives, addressing the bureaucratic and hierarchical imbalances, understanding the complexity of schooling and overcoming simplistic solutions, and capitalising on the largely untapped resources beyond a place called school.

## 6. Guidance for Developing a Networked School Community

### *6.1. Expanding the Academic Focus*

While schools have an academic focus situated within a holistic education, priority and higher status within individual schools and across education systems, might be afforded to some areas of the curriculum at the expense of other areas. For example, in Australia, the development of the Australian Curriculum [27] reflects the emphasis and priority given to English, Mathematics, Science and History as these were selected as the first four learning areas for development and implementation. The Technologies learning area, has been prioritised in the third phase of curriculum areas to be developed, after Phase 2 areas, namely, Languages, Geography and the Arts [27]. Other countries might adopt different priorities, such as those countries which see technologies as the driver of innovation and international competitiveness.

Increasingly, it is Governments, and their bureaucrats required to implement Government-directed policy and initiatives that are directing curriculum priorities and there is a concern that curriculum breadth and depth has been diminished in recent years in Australian schools through a focus on measurable assessment regimes such as NAPLAN [28] and PISA [29]. Engaging with students, parents, and the local community is needed at all stages of curriculum design and implementation.

There is a construction through policy and media that Australian standards are diminishing, based upon low level and often false and misleading interpretations of a narrow range of data.

To illustrate, Dinham [30] in *A political education: hijacking the quality teaching movement* makes a compelling argument that:

> *All we seem to hear about these days is failing teachers in failing schools. Those from business, government and the field of economics have all weighed in, criticising teachers, teacher educators and schools and offering often naive, misinformed or ideologically driven "remedies".*
> *…What I do see is a blanket stigmatisation of teachers, principals, teacher educators and education system leaders. All these "solutions" ignore the fact that Australia still performs well on international measures of student achievement such as the Programme for International Student Assessment (PISA) [30].*

Similarly, Cumming cuts through this in her analysis in *ACE Notepad* [31].

> *Claims by the Australian government that Australian education will be "world-class" and "top 5" by 2025 could be interpreted to believe that Australian education is poor quality. Australian education is very high quality on "world-class" on all fronts. Statements of "top 5" relate to performance on 2 h-long standardised tests administered to a sample of students in a sample of schools in a number of countries that pay to participate in international comparison tests [31].*

Cumming concluded that, "In Australia we now focus on judgement of schooling by the MySchool publication of school achievements based on less than four hours of overall testing (Year 7 example) consisting of 169 predominantly multiple choice and very short answer questions and a 30–40 min writing task. Our education quality is far greater than this" [31]. The authors of this paper add that those tests are paper-based and do not adequately align with the evolutionary stages of stages appropriate for a digital, networked world. It is noted that there has been no commentary in relation to our achievements that exceed those of other countries in relation to digital literacies. For example, in the important report *Preparing Australian Students for the Digital World: Results from the PISA 2009 Digital Reading Literacy Assessment* [32], Australia was the second highest performing country in relation to this assessment of 15 year old students' ability to read, understand and apply digital texts, with only Korean students outperforming Australian students. Therefore, it is refreshing when more balanced, evidence-based commentary appears which highlights the contributions and achievements when the academic focus is expanded.

While leading educational thinkers such as Arnold, Dewey, Montessori, Frobel, Whitehead, Hilda Taba and Goodlad have rightly identified the importance of providing a balanced total education of the young, caution is expressed in relation to governments in Australia being more focused on outcomes in a limited range of measurable outcomes, such as literacy and numeracy scores through NAPLAN. Interestingly, in his seminal 1986 critique of US schooling, Goodlad [13] cited Diane Ravitch's explanation of what was needed to be included in a quality, balanced education. More than a quarter of a century later, Ravitch in the recently published *Reign of Error* [33] is immensely critical of education agendas in the US, and, in referring to the testing agenda, claims that:

> *The thirst for data became unquenchable. Policy makers in Washington and the state capitals apparently assumed that more testing would produce more learning. They were certain that they needed accountability and could not imagine any way to hold schools "accountable" without test scores. This*

> *unnatural focus on testing produced perverse but predictable results: it narrowed the curriculum; many districts scaled back time for the arts, history, civics, physical education, science, foreign language, and whatever was not tested [33].*

Ironically, this is happening at a stage in history when the digital and networking technology has fundamentally changed the nature of work and life beyond schools [34,35]. This has placed even greater importance in having a balanced holistic education that will enable all students to thrive in an increasingly networked, collaborative world and has opened the way for the student's homes to play an ever greater role in the education of the children.

Most nations have policies that espouse that their education systems aim to provide a quality holistic education for every one of its young people appropriate for the 21st Century world in which they live. They are becoming aware that learning occurs in some form 24/7/365 from birth onwards, and that students don't physically have to be in a school to learn. However, what is tending to occur is that the schools under their control continue to be required to focus more narrowly on a small subset of the curriculum determined by high stakes testing, and national and international "school" performance tables that further accentuate the imbalance. To lead and reshape schooling, expanding the academic focus is both essential and an enriched vision of schooling and learning.

### *6.2. Expanding the Educational Perspectives*

In addition to the importance of expanding the academic focus, it is important to expand the educational perspectives to enable a more appropriate definition of schooling rather than previous definitions that constrained conceptions of where and when schooling and learning takes place. The constrained conception of schooling is often reinforced and reproduced by school assessment, reporting and credentialing procedures which focus only on "in school" learning and reflects the view that only formal learning is valued; *i.e.*, the formal learning which occurs within the school walls, and within the school timetabled hours.

There are tensions here, as, implicitly, to succeed at school, students already need to engage beyond the "place called school" and beyond their timetabled lessons. Other learning by young people undertaken outside the classroom, including their reflective thinking, self-regulation, collaboration online, digital literacies, and networked communications warrant serious, explicit recognition. Learning in a networked world provides more powerful learning spaces that can lead to student success at school, in work and life. As outlined in the Horizon Report [1], personal learning environments and mobile learning are enabled by technologies available and being used by young people now.

When one considers that the formal timetabled school year is scheduled for approximately 200 days of the year, for about 5–6 h a day for young people aged from around age 4–5 years to age 17–18, this is a narrow view of learning time, when compared with 24/7/365 learning. Thus, many of our students spend only around 16%–18% of their learning time each year in formal schooling. What occurs in their remaining, potential learning time is largely unrecognized, unguided, grossly underdeveloped and largely untapped.

Interestingly, one of the most significant trends in recent years has been the acknowledgement of the importance of early years education and care, often defined as 0–5 years, or 0–8 years. These years occur largely prior to formal schooling, and, until recently, might be considered as "the missing years".

Justifiably, learning which takes place in those early years has been the subject of heightened focus for research and curriculum. Accompanying these developments has also been the recognition of the importance of technologies in early childhood. For example, the *Early Years Learning Framework for Australia: Belonging, Being and Becoming* [36] makes explicit the importance of technologies in Outcome 4 which states that, "Children resource their own learning through connecting with people, place, technologies and natural and processed materials" [36]. Learners in the early years have an increasingly extensive range of digital technologies to enable communication, interaction and sharing meaning making to deepen knowledge and understandings, which opens up possibilities and potential for rethinking early years learning.

Therefore, there becomes a shared recognition of making more visible the important learning in the early years, prior to formal learning. For school readiness, success at school can be either enhanced or diminished by the knowledge and skills which young children acquire, such as vocabulary and self-control by age 3 [37,38]. Some researchers [39,40] claim that young children's futures are largely decided before they enter school, and might be destined to years in remediation in instances where readiness is not appropriate.

The role of parents/caregivers, therefore, should not be underestimated. In marked contrast to the "free and non-secular" schooling provided the 5–18 age group, the education of young children prior to formal schooling is largely the sole responsibility of parents/caregivers and their decisions about who and when to engage others in the education of their children. Historically, it can be understood why this has occurred, these are vital years, and informed by early childhood educators, the use of networked school communities might enable a birth to graduation model of learning. Expanded educational perspectives that understand lifelong and life-wide learning, through the entire lifespan, complement the need to expand the academic focus.

### *6.3. Addressing the Bureaucratic and Hierarchical Imbalances*

The organization of schools and school systems, due mainly to accountability and responsibility requirements, remains very hierarchical. The most senior in the educational hierarchy tend to be assigned the opportunities to develop a macro, strategic vision, and as the hierarchy then moves to those less senior in the organisation to the vast majority of the teaching staff, they are seen as having a limited micro perspective that markedly disempowers them professionally [3]. In brief, in a networked world, this hierarchical structure of leadership, reflecting a "command and control" approach with accountability as the key driver, constrains the power and possibilities of networked organisations. Alternatively, a networked organisation distributes leadership and can capitalize upon the collective wisdom of all stakeholders, and promote agentic professional behaviours, and have an improvement agenda, rather than an accountability agenda.

In addition, if the parents/caregivers, grandparents, students and the wider school community have little more than a symbolic role in those schools where the governance and ultimate control is vested in government bureaucrats and the assigned "command and control" leadership model, then this also negates against a new, more powerful potential of collaborative, interdependent, networked school communities. The networked school community is in antithesis to the strongly hierarchical organizational structure that invariably is evident in which the central bureaucracy ultimately exerts

constraining control of the schools. Developing a strong, respectful, local relational culture is desirable, where decision making is shared, the contextual complexities are understood, and teachers, students, and parents/caregivers work in collaboration and have agency to work within more inclusive, shared, distributed leadership frameworks.

### *6.4. Understanding the Complexity of Schooling and Overcoming Simplistic Solutions*

Much of the discourse of schooling, presented in media, public policy debates, governments and educational bureaucrats searches for the simple solution, the "silver bullet" that will solve their construction of problems with its schools and teachers. There is a construction of individual competitiveness, for example, conveyed through the naming of the *MySchool* website in Australia. The presentation of MySchool as enabling parent choice and competitiveness between schools, school systems and jurisdictions suggests the "black box" factory model of schooling. The key question—who is responsible for student outcomes?—is more complex than selection of a school. An alternative, more sophisticated approach might well have been the naming of an *OurSchools* website in which schooling is seen as a shared challenge, and the interdependent, complex range of factors associated with a more appropriate response to that question are better understood.

Therefore, approaches which search for the "silver bullet" needs to be replaced with an understanding of the complexity and contexts of schooling, and that technology in education is a "wicked" rather than a "tame" problem [9,10]. Blended learning is an example of a more sophisticated approach which allows a diverse range of educational responses where technologies can be blended to provide a mix of face-to-face through to totally online approaches. The blend needs to be determined by an educational rationale and an understanding of the macro trends.

There is evidence in media reports where teachers are subjected to blame for inadequate outcomes, yet policy makers and senior bureaucrats accept the praise when learning achievements. The *quality teaching* agenda assists by distinguishing the differences between "quality teaching" and "quality teachers". The former reflects a sophisticated, interdependent view of the complexity of teaching and learning. This is not new, and, again was identified by Goodlad [13] provided this advice when he was prompted to comment upon the simplistic assumption that the answer to improving schooling was to focus on the teachers, or the principal.

> *It would be patently foolish to argue against the importance of teachers and principals. But to build a strategy for improvement on the premise that good principals produce good schools would be almost as foolish…*
>
> *Significant educational improvement of schooling, not mere tinkering, requires we focus on entire schools, not just teachers or principals or curricula or organization or school-community relations but all of these and more [13].*

It is not difficult to find that governments still promote the same simplistic solutions and explanations. A young person's success at school and in life depends on a multitude of interrelated developmental factors, such as social, physical, emotional and intellectual development. Diverse contexts and variables, such as the home learning culture, the mother's level of education [41],

parent conversations with the young [37], the child's degree of self-control [38], and home Internet access [41], as well as the quality of teaching and leadership, impact on educational success.

There is much more to be gained by governments, education bureaucrats, school systems, schools and our community through being more insightful and honest about the complexity of the schooling process, and acknowledging the more mature, powerful and potential collaboration actively involving its homes—its parents/caregivers, grandparents, teachers, students, and the wider community—in a far collaborative, networked mode of schooling.

### *6.5. Capitalising on the Largely Untapped Resources beyond a Place Called School*

In *Developing a Networked School Community: A Guide to Realising the Vision* [3], the authors examined the immense, untapped resources outside the classroom that could impact positively on the learning of young people. Those potential resources include parents/caregivers, grandparents, students, and students' homes, and these are discussed here.

- **Parents/Caregivers—Educated and motivated:** Historically, developed nations now have the most educated cohort ever, with most not only motivated, but educationally ready to collaborate in the "teaching" of their young, and this expertise remains largely unrecognized, underused and undeveloped.
- **Grandparents—Underdeveloped resource:** Developed nations also now have grandparents who are similarly highly educated, and a human resource which can draw upon diverse and vast list experiences. Grandparents also constitute a largely unrecognised, undervalued and underdeveloped resource that is rapidly growing in size with the influx to their ranks of the "Baby Boomers" and increased life expectancy. In many situations, with both parents or the single parent working, grandparents have the potential to provide during and after school "teaching". Grandparents' current efforts and capacity need more recognition and to be supported by schools and teachers [39,40,42].
- **Students—The 'Net Generation:** The 'Net Generation [2,43] has long since normalized the everyday use of the digital and are using it to shape their lives and learning. Despite their acknowledged interest and competence in digital technologies, it needs to be asked if this is being listened to or drawn upon by their schools and teachers. The Project Tomorrow report in 2013 [17] provides compelling evidence that students, despite having increased access and ownership of their own personal devices, are not using these in schools.
- **Students' Homes—Technological advantage:** In many instances, the digital capacity of the student's homes has surpassed that of the classroom. The study by Lee and Ryall [44], which compared the digital technology in the homes of 30 Year 6 students with that of their classroom, found that the expenditure on digital technologies in the home was conservatively a multiple of 15 times that of the classroom. This home-school digital technology divide is growing through the acquisition of mobile computing, such as iPads, iPhones, and use of social media. Networked school communities enable the home-school divide to be better viewed as a home-school difference that can be capitalised upon.
- **Potential Resource or Threat:** There are media reports and school system policies being developed and implemented which is this potential resource as a threat, with personal digital

> technologies being misused by some students. The knee-jerk reaction has tended to be quick to ban their access and use in schools.

A continuing message which emphasised here is that the often, growing difference between the range of digital technologies provided in the home with those provided by the school, should not be seen as a digital divide, but rather can be approached positively as a home-school difference, that can provide the platform for a far more collaborative, networked, balanced mode of schooling. Clearly, significant work is needed to progress this as the *Project Tomorrow* report [17] indicates that, "It is precisely the digital learners' desire to use mobile devices and social media tools to self-direct their learning that is often waylaid by these school policies as well as other institutional barriers". In comparing findings from the 2003 with 2012, when students were asked to identify the barriers to using technology at school, they indicated that the Internet access was too slow, school filters and firewalls block websites they needed, there was not enough computers to use, the computers were too old, the software was too old or not good enough to use. The 2012 responses, almost a decade later, included complaints again about school filters and firewalls as well, but, disturbingly, they stated that their school was limiting their access to the digital tools and resources they use regularly outside of school. Many reported that they were unable to access social media sites, cannot use their own mobile device, cannot use text messaging, and that there are too many rules about using technology [17].

A further complaint by students [17] was that their teachers are reluctant to assign Internet based homework or assignments, often on the basis on equity concerns relating to some students not having access. This is a major concern and highlights a significant disconnect between students and teachers in their use of technologies for learning. Moreover, it represents a disconnect between schooling and higher education, where University students are expected to engage online to succeed and are immersed in rich digital ecosystems.

While much has been written about the 'Net Generation', little has been written about the digital potential and capabilities of parents, caregivers and grandparents. Networked school communities provide rich opportunities to encourage research into the new capacities of parents and caregivers and their children's access to increasingly rich technological homes for creating new concepts of learning environments. In many situations, there has been an expectation that, for students to succeed, that schools expect parents and caregivers to provide young people with home access to the Internet, colour printers and a range of software applications to plan, create, draft, edit, publish and submit their assessment tasks. However, this has tended to be implicitly expected, and this needs to be made more explicit as part of strengthening the home-school nexus. In relation to students taking advantage of learning online and using systems they have at home and constantly available to use, this learning tends

> *...to happen serendipitously and in response to an immediate need for knowledge, rather than being related to topics currently being studied in school. ...having a profound effect on the way we experiment with, adopt, and use emerging technologies [1].*

More sophisticated understandings and strategic approaches are needed which empower parents/caregivers and grandparents in planning to use their increasingly rich home digital technologies in the education of their children to strengthen and collaborate with what schools aim to achieve. *Project Tomorrow,* from its 2010 survey of over 42,000 parents, made this clear in stating that:

> *Parents have always been allies and advocates for their children in the traditional school environment. With new digital choices, today's parents are now enabling greater educational opportunities for their children, both in and out of school, and at the same time, empowering a new paradigm for the role of parents in education [45].*

This trend is consistent with that identified by Shirky [46] when he noted the power which a digitally enabled population was likely to increasingly exert. In addition, and importantly, *Project Tomorrow* also noted that over two thirds of parents K-12 planned to acquire a new mobile device for their children in the coming year, and wanted that facility to be used in the classroom, while a slightly larger proportion, just over 70% believed they and not the school should buy that mobile computing [45]. What is clearly apparent in the survey is that the parents/caregivers are beginning to flex their muscles, are strongly saying they expect teachers to make extensive use of the appropriate digital technologies and that if schools don't, they will. Consequently, this underlines and strengthens our case for our identification of the next phase of schooling as schools becoming networked school communities. There is a very powerful, evidence-based message for all governments, school systems, and school leaders for capitalising on the largely untapped resources beyond a place called school.

The more immediate reality is that pathfinding schools across the developed world are leading the way to inform this shift being suggested. They understand the need for "the system" to change, and, through their leadership, they are investigating and implementing their responses to the challenges and the opportunities to reshape schooling. The pathfinding schools understand that, for many of them, physical attendance by teachers and students at a school will remain vital for many years to come, but, increasingly, the pathfinders are offering effective virtual, online teaching and learning opportunities anywhere and anytime—24 h/7 days/365 days each year—and are enhancing learning beyond physical attendance, and rethinking the purpose of that attendance.

## 7. Conclusions

This paper established that we are immersed in an increasingly digital, networked world and that this has implications for reshaping schooling, how we define "a place called school", and, in particular, where and when learning takes place. Through the provision of the conceptualisations of evolutionary stages of schooling [11,12], the paper suggested that educators can reflect and consider how their educational contexts might be explained in terms of their moves toward digital normalisation and the extent to which they have become networked school communities. Education and technological changes were explicitly foregrounded as being a "wicked" problem, not able to be explained in simple, logical and ordered ways, and educational contexts are complex.

This is an exciting time to play a leadership role in developing a networked school community [3] to enhance learning and teaching. Guidance was summarised and discussed in terms of the importance of TPACK capabilities and networked school communities, and the need for expanding the academic focus, expanding the educational perspectives, addressing the bureaucratic and hierarchical imbalances, understanding the complexity of schooling and overcoming simplistic solutions, and capitalising on the largely untapped resources beyond a place called school. Schooling in the 21st Century will require explicit attention to the impact and potential of digital technologies in relation to the broader purposes and models of schooling. Specifically, in advancing thinking about this, this

paper has provided guidance in relation to key questions facing leadership to reshape schooling in a networked world, including how might schools move into the networked mode, what is required to lead and manage a networked school community, and how a networked school will become defined less by its physical space and timetabled lessons, and defined more by being networked and understanding that learning can take place anywhere, anytime.

## Conflicts of Interest

The authors declare no conflict of interest.

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